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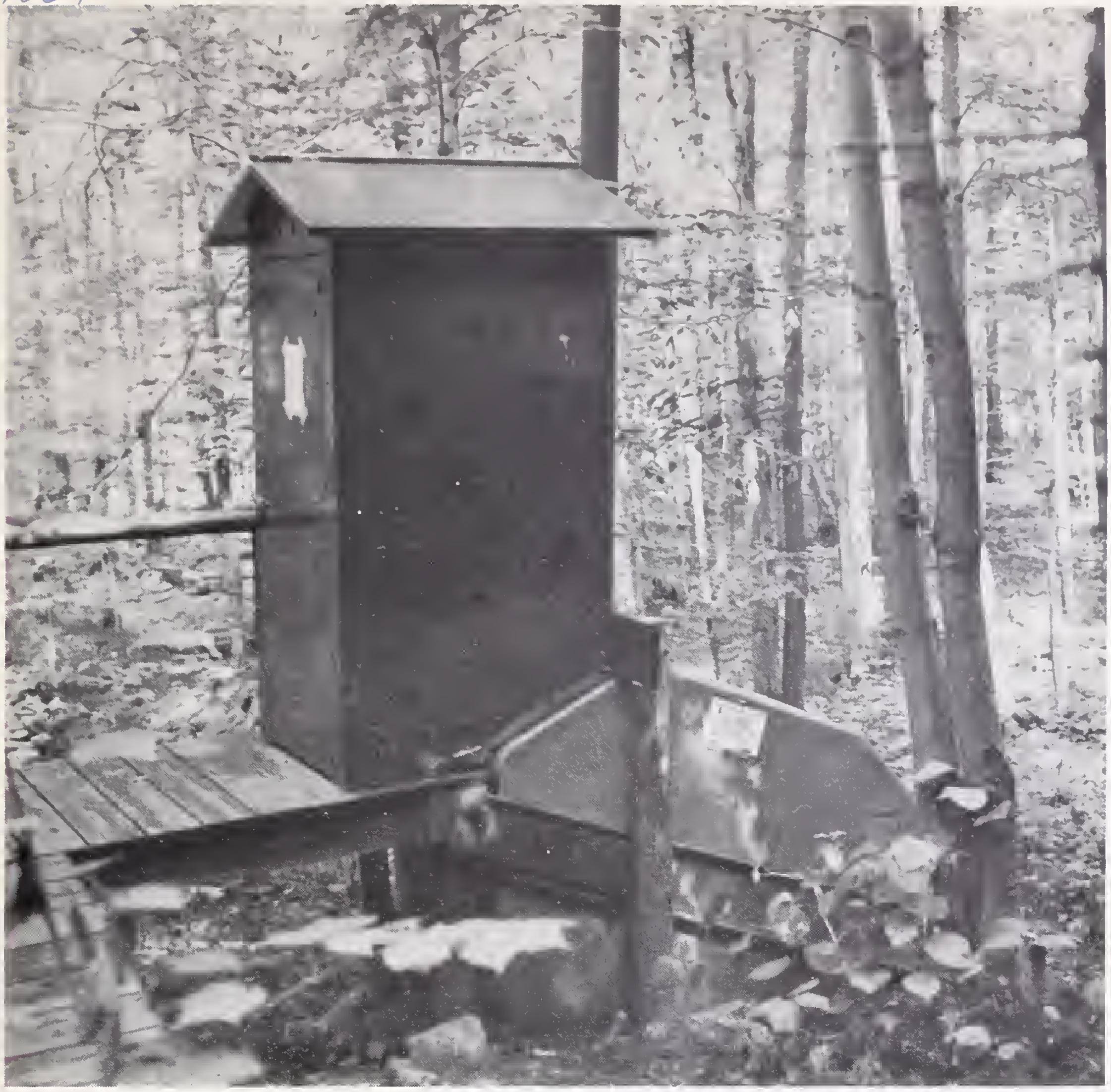

FORESTRY SCIENCE
PHOTO STORY

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An Outhouse?
No -- A Clivus Multrum

The Forest Service is testing the clivus, a Swedish invention for self-contained waste disposal, in backcountry areas. It may help preserve a fragile ecology.

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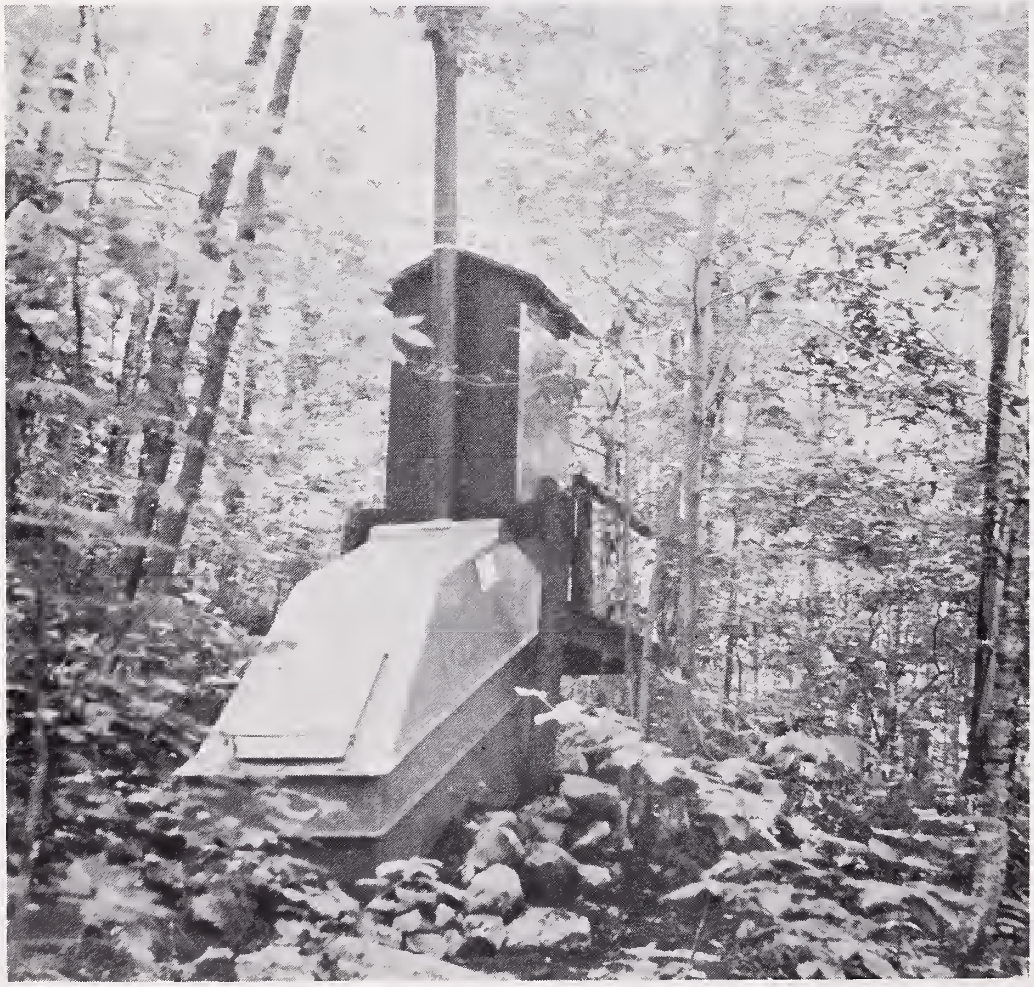
NORTHEASTERN FOREST EXPERIMENT STATION • UPPER DARBY, PENNSYLVANIA 19082

Recreational use of backcountry areas is increasing. And so, unavoidably, is man's impact on the wildland ecosystem. A real threat is pollution of streams and lakes by human wastes.

How can man dispose of wastes in the back country? Pit latrines, leaching containers, and flyout holding tanks have all been used, but a newcomer to the species, now being tested by the U. S. Forest Service, may prove an important alternative.

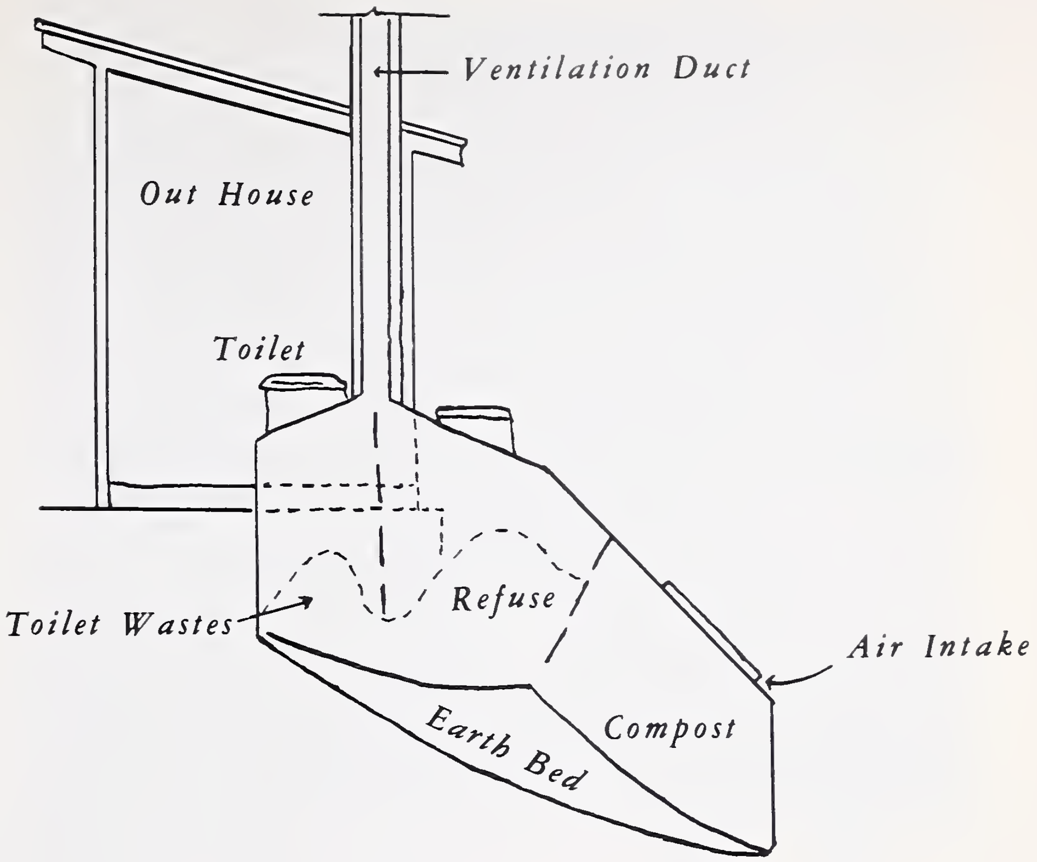
The "clivus multrum" (from the Latin for "inclining" and the Swedish for "composting room") is a self-contained system for waste disposal that uses no water, no chemicals, no energy and requires little maintenance. The system has been used successfully in private homes in Sweden and Norway, but its potential for use in a remote location has not been determined.

Two test units installed by the Forest Service will help establish the applicability of the clivus toilet to backcountry conditions. Monitoring the toilet's performance and identifying possible drawbacks is the job of a backcountry research project based at the Northeastern Forest Experiment Station's Forest Sciences Laboratory in Durham, N. H. The toilets are located in remote mountainous areas of Vermont and New Hampshire.



Around back is the nine-foot long compost box.

DIAGRAM OF THE CLIVUS



From the front, the clivus unit looks like a standard outhouse set on a platform about nine feet above the forest floor. Around back is the most important part of the clivus, the nine-foot long compost box, made of fiberglass and containing chambers for toilet wastes, garbage, and storage. The uppermost chamber, for toilet wastes, opens into the outhouse where a special toilet stool with a sealing lid has been installed. The toilet is connected to the decomposition chamber by vertical pipes, wider at the bottom than the top to prevent soiling the sides since there is no flushing mechanism. Garbage waste, deposited in the second receptacle, falls through the same kind of pipe into an adjacent chamber separated from the first by a vertical partition.

As the material slides down the sloping container it undergoes biological decomposition. At the same time, it forms a mix with a 12-inch layer of grass, leaves, garden soil and peat moss piled at the bottom of the clivus. The resulting mix, which collects in a third chamber at the rear of the box, is garden-ready compost in two years, or less, depending on such variables as the volume of use and weather conditions.

This surprisingly simple process would overcome, in theory, some of the problems of the more conventional and complicated waste-disposal systems that have been used in backcountry areas: overflowing latrines, contamination of ground water, expensive and involved installation and maintenance, and in some cases, the need for fuel. The Forest Service is interested in whether the clivus will present its own unique problems in a wilderness situation.

The clivus works like a contained compost heap.

After a summer of tests at one site, the outlook for the clivus is hopeful. In a preliminary report researchers cited some general points about the clivus' performance. They found that the toilet's capacity seemed adequate for the volume of use it received--from 15 to 20 people per day for a 12-week period. The main problems came with installation. Soil and peat moss for the floor of the composting box had to be flown in from an outside source since the forest soil available in these and most other backcountry sites is thin and unsuitable.

Since the composting process is aerobic (dependent on the presence of oxygen), good ventilation is vital to the proper functioning of the unit. Difficulties in erecting the specified 16-foot ventilation stack necessitated the use of a shorter stack. This alteration may have impaired ventilation enough to cause a temporary, slight ammonia smell, indicating undesirable anaerobic conditions. The Forest Service group stressed the importance of a long vent pipe and, if possible, use of a wind-driven exhaust fan.

Because decomposition takes place in a contained, well-ventilated and moisture-controlled space, contamination is not a problem with the clivus. Forest Service scientists are testing compost collected at the end of the summer to determine the rate of decomposition.

Research required to establish the clivus toilet as an acceptable means of waste disposal in the backcountry may take several years. The results will represent a step toward greater compatability between people and a complex wildland ecosystem.

[*Mention of products does not constitute Forest Service endorsement.*]